CS 160
CS Orientation

What is Computer Science?
Chap. 1
Overview

- Problem Solving in Everyday Life
- Types of Problems
- Problem Solving with Computers
- Difficulties with Problem Solving
Objectives

1. Describe the difference between heuristic, algorithmic solutions.
2. List, describe problem-solving steps for algorithmic solution.
3. Use problem-solving steps to solve problem.
Problem Solving in Everyday Life

1. Identify the problem.
2. Understand the problem.
3. Identify alternative ways to solve problem.
4. Select best alternative.
5. List solution steps for alternative chosen.
6. Evaluate solution.
Types of Problems

Problems with ...

• Algorithmic solutions

• Heuristic solutions

• Combination of algorithmic, heuristic solutions
Problem Solving with Computers

Definitions:

• Solution $\iff$ instructions followed to produce best result

• Result $\iff$ outcome, computer-assisted answer

• Program $\iff$ instructions for solution using computer language
Difficulties with Problem Solving

• Lack of problem solving experience
• Inadequate solution steps
• Incorrect problem definition
• Alternatives chosen incorrectly
• Invalid logic
• Incorrect solution evaluation
Quiz #1

• Get into groups of 4-5.
• Write a solution/algorithm for:
  – Start a car (include directions for if the car doesn’t start)
• Exchange solutions with another group, and state why you can or can not accomplish the task based on their instructions.